Earth Venture- 2 Announcement of Opportunity

Proposal Evaluation Plan

September 29, 2011

Approval

Paul Hertz*
Chief Scientist, SMD

Margaret A. Luce*
Deputy Director, ESD

Cindy L. Daniels*
Technical Lead, SOMA

Ramesh K. Kakar*
Program Scientist, ESD

Waldo J. Rodríguez*
Acquisition Manager, SOMA

David B. Jarrett*
Program Executive, ESD

**Signed copy on file.*

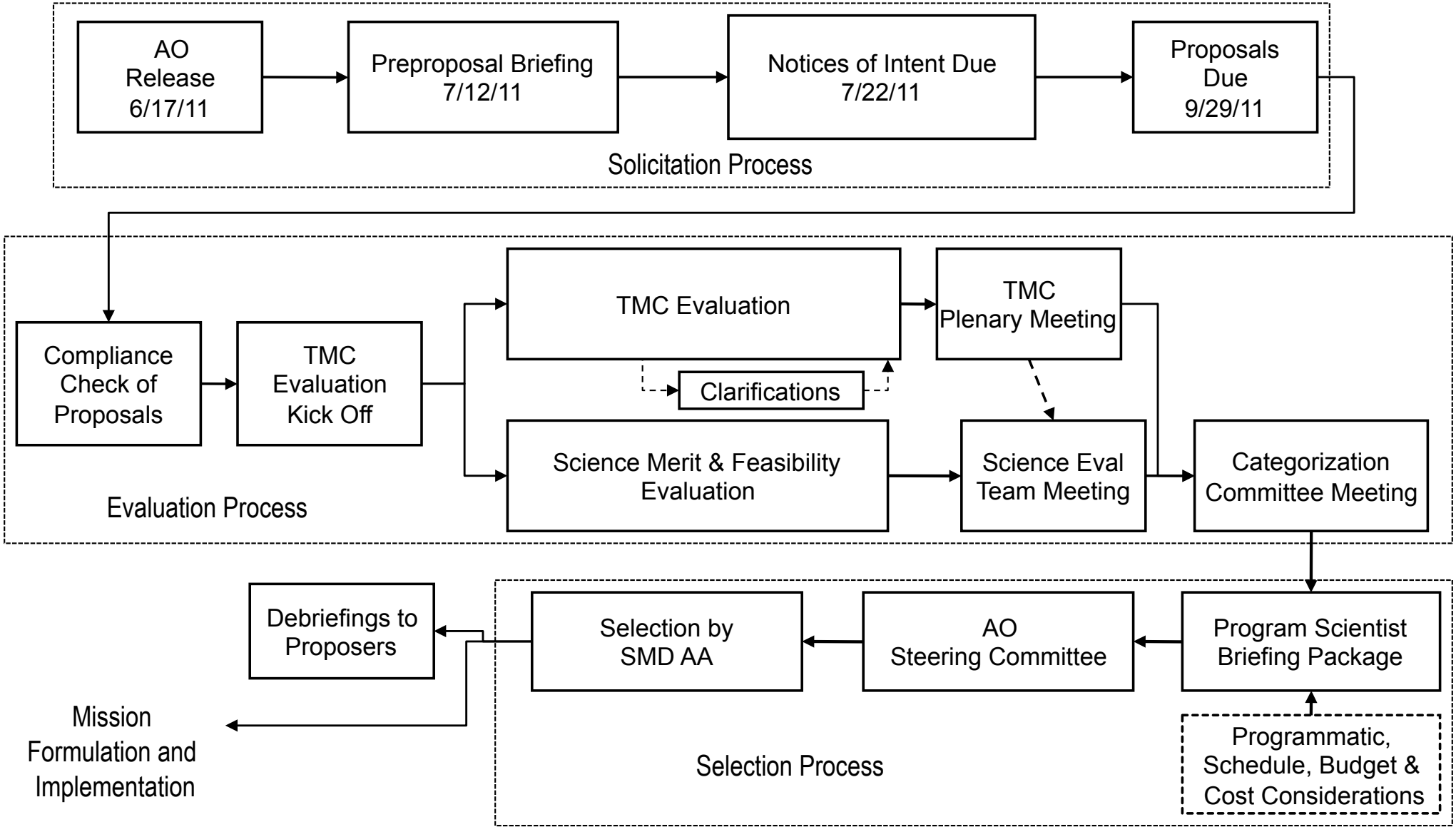
Introduction

This is the Evaluation Plan for the Earth Venture -2 (EV-2) solicitation. This plan includes the evaluations of the Scientific Merit, the Scientific Implementation Merit and Feasibility, and the Technical, Management, and Cost (TMC) Feasibility of the Mission Implementation, Including Cost Risk of the investigations submitted as response to the EV-2 Announcement of Opportunity (AO).

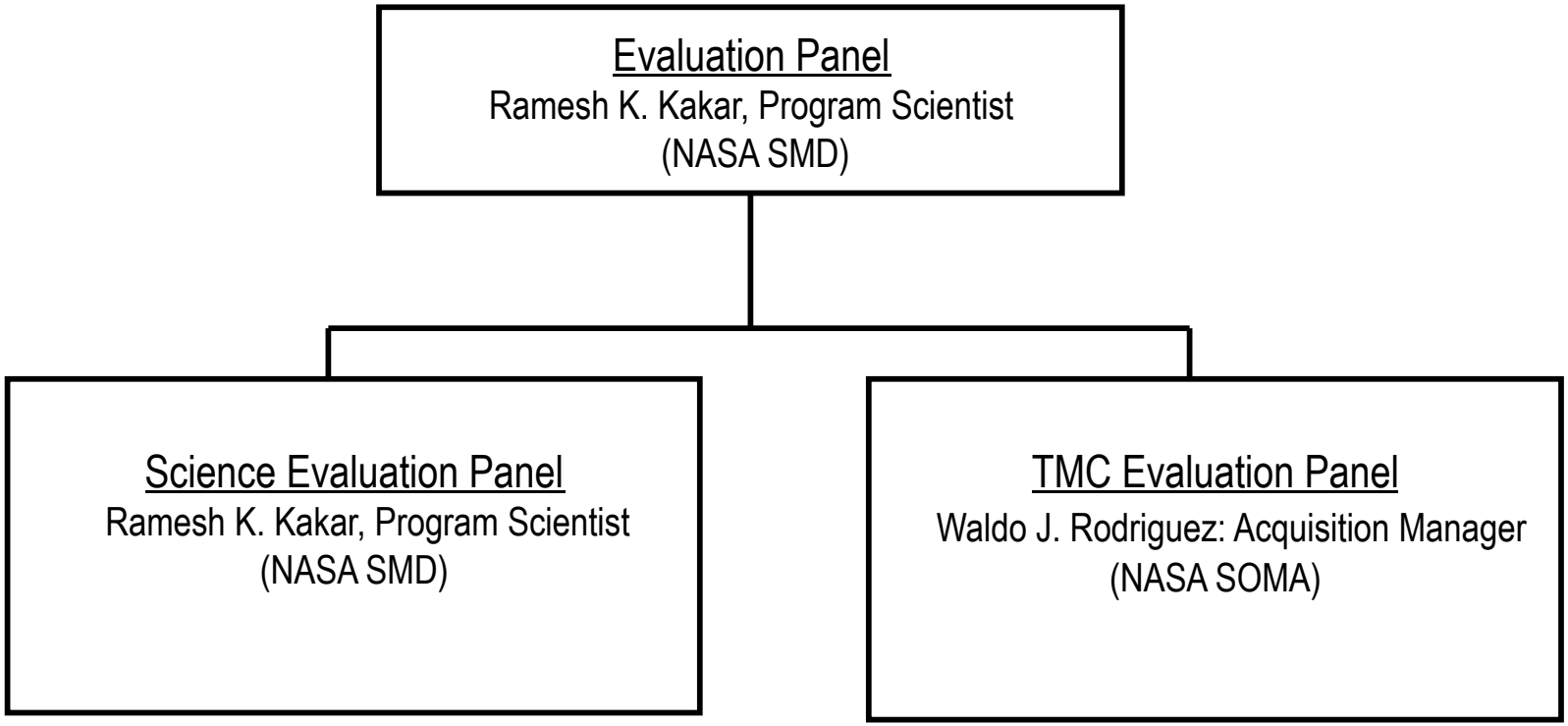
Principles for Evaluation

- All proposals are to be treated equally.
- Merit is to be assessed on the basis of material in the proposal.
- Ratings should reflect the written strengths and weaknesses.
- Everyone involved in the evaluation process is expected to act in an unbiased objective manner; advocacy for particular proposals is not appropriate.

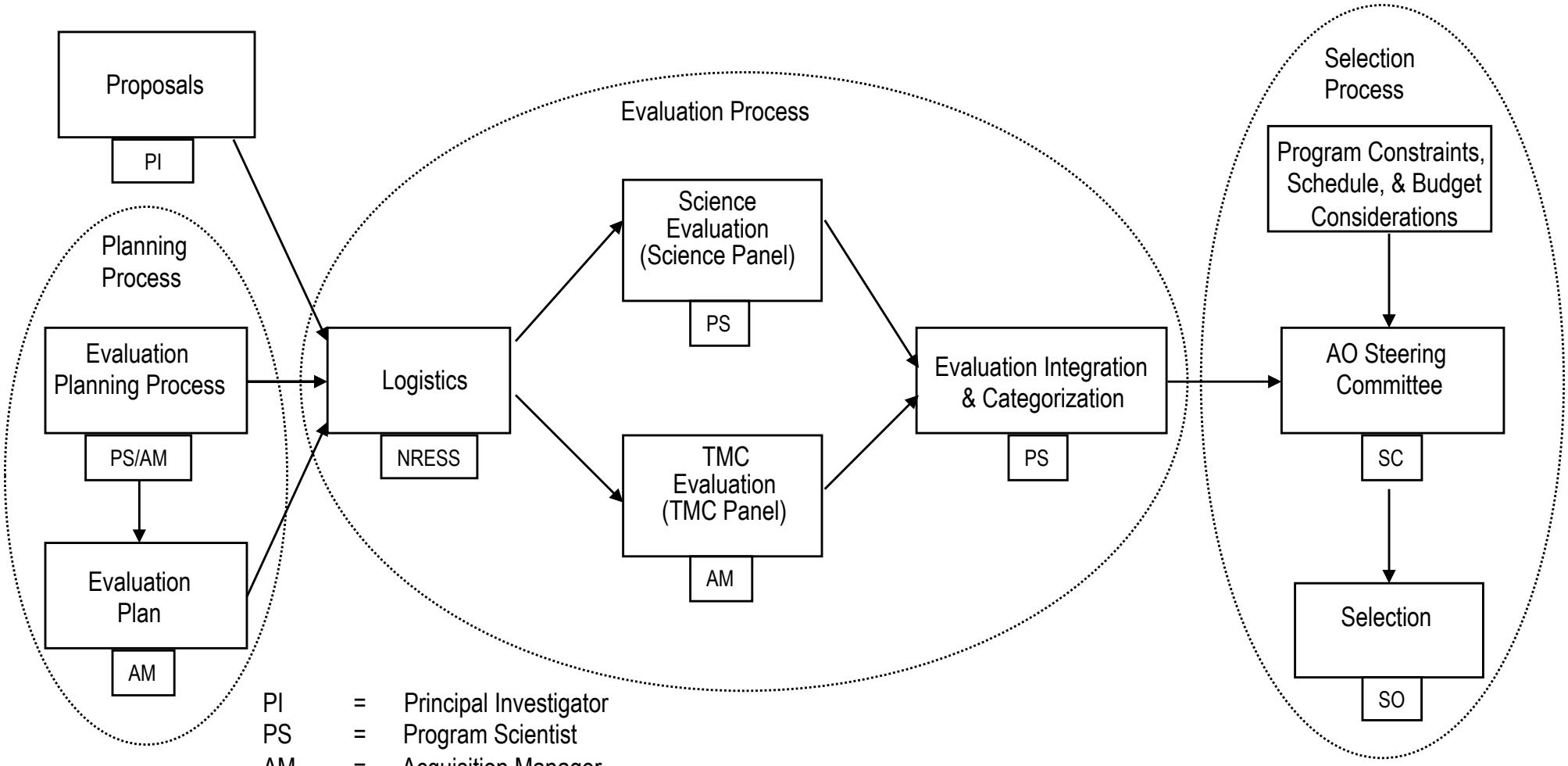
Proposal Evaluation Flow



Evaluation Panel Organization



Evaluation Responsibilities



PI = Principal Investigator
PS = Program Scientist
AM = Acquisition Manager
SC = AO Steering Committee Chair
SO = Selecting Official
NRESS = NASA Research and Education Support Services

Conflicts of Interest (COI)

- NRESS will cross-check all the science evaluation panel members against the lists of personnel and organizations identified in each proposal submitted to determine whether any organizational COI exists.
- ERT will cross-check all TMC evaluation panel members against the lists of personnel and organizations identified in each proposal submitted to determine whether any organizational COI exists.
- Additionally, all evaluators must divulge any other financial, professional, or potential personal conflicts of interest, and whether they work for a profit-making company that directly competes with any profit-making proposing organization.
- All Civil Service evaluators must file a Form OGE 450 or SF278 to be reviewed for financial conflicts of interest.

Conflicts of Interest (COI)

- All known conflict of interest issues are documented and a COI avoidance plan has been developed to minimize the likelihood that this will arise as an issue in the evaluation process. All determinations regarding possible COI that arise will be logged as an appendix to the COI avoidance plan.

- If any previously unknown potential conflict of interest arises during the evaluation, the conflicted member(s) will be notified to stop evaluating proposals immediately, and the Panel Chair will be notified immediately. Any actually conflicted member(s) will be immediately removed from the evaluation process, and steps will be taken, expeditiously, to remove, mitigate, or accept any actual or potential bias imposed by the conflicted member(s).

- Members of the Science and TMC panels are prohibited from contacting anyone outside their panel for scientific/technical input, or consultation, without the prior approval of the Responsible Official.

Proprietary Data

- All proposal and evaluation materials are considered proprietary.
- Viewing of proposal materials will be only on a need-to-know basis.
- Each evaluator will sign a Non-Disclosure Agreement (NDA) that must be on file at NRESS prior to any proposals being distributed to that evaluator.
- All proposal materials will be numbered and controlled, and a record will be maintained as to which evaluator has what materials.
- Evaluators are not permitted to discuss proposals with anyone outside the Evaluation Team.
- All proprietary information that must be exchanged between evaluators will be exchanged *via* the secure NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES), *via* the secure Remote Evaluation System (RES), *via* secured Webex, or *via* encrypted email, FedEx, fax, or regular mail. Weekly teleconferences among TMC evaluators will be conducted *via* secure telephone lines.
- Proposal materials will be collected from evaluators when the evaluation process is complete. Some copies will be archived in the NRESS and SOMA vaults; all other proposal materials will be destroyed.

Evaluation: Ground Rules

- All Proposals will be evaluated to uniform standards established in the AO, and without comparison to other Proposals.

- All evaluators will be peers of the proposers in the areas that they evaluate.

- Specialist Evaluators (to provide special technical expertise to the TMC Panel) and non-panel/mail-in Evaluators (to provide special science expertise to the Science Panel) may be utilized, respectively, based on need for expertise in a specific technology or science that is proposed.

Evaluation: Clarification from Proposers

NASA will request clarification of potential major weaknesses in the TMC Feasibility of the Mission Implementation that have been identified by the TMC evaluation panel.

- NASA will request such clarification uniformly, from all proposers.
- All requests for clarification from NASA, and the proposer's response, will be in writing.
- The ability of proposers to provide clarification to NASA is extremely limited, as NASA does not intend to enter into discussions with proposers.
- PIs whose proposals have no major weaknesses will receive an email informing them.
- The form of the clarifications is strictly limited to a few types of responses:
  - Identification of the locations in the proposal (page(s), section(s), line(s)) where the major weakness is addressed.
  - Noting that the major weakness is not addressed in the proposal.
  - Stating that the major weakness is invalidated by information that is common knowledge and is therefore not included in the proposal.
  - Stating that the analysis leading to this potential major weakness is incorrect and identifying a place in the proposal where data supporting a correct analysis may be found.
  - Stating that a typographical error appears in the proposal and that the correct data is available elsewhere inside or outside of the proposal.

The PI will be given at least 24 hours to respond to the request for clarification. Any response that goes beyond a clarification will be deleted and will not be shown to the evaluation panel.

Evaluation Criteria and Selection Factors

Evaluation Criteria:

- Scientific Merit of the Investigation
- Scientific Implementation Merit and Feasibility of the Investigation
- TMC Feasibility of the Mission Implementation, Including Cost Risk

- Weighting: the first criterion is weighted approximately 40%; the second and third criteria are weighted approximately 30% each.

Selection Factors:

- NASA SMD cost
- Programmatic factors
- PI, Project Manager, Project Systems Engineer and their institutions, prior experience (especially in meeting cost and schedule constraints)

Compliance Check

Compliance Criteria

Administrative:

1. Proposal received on time
2. Original signature of authorizing official included
3. Electronic cover page and summary (NSPIRES submission) received on time
4. Proposal includes proposal summary information with content identical to electronic cover page
5. Correct number of copies each including a CD
6. Meets page limits
7. Meets general guidelines (one volume original easy to disassemble, maximum 55 lines text/page, maximum 15 characters/inch --approximately 12 pt font)
8. Required appendices included; no additional appendices
9. Budgets are submitted in required formats
10. All individual team members who are named on cover page indicate commitment through NSPIRES
11. All export-controlled information has been identified

Compliance Criteria

Scientific:

12. Addresses solicited science research programs
13. Requirements traceable from science to instruments to mission
14. Appropriate data archiving plan
15. Baseline science mission and threshold science mission defined

Technical:

16. Complete spaceflight mission (Phases A-F) proposed
17. Team led by a single PI
18. Includes commitment for E/PO program
19. PI-Managed Mission Cost within cost cap
20. Contributions within contribution limit
21. Co-investigator costs in budget
22. Launch date prior to launch deadline
23. Includes table describing non-U.S. participation
24. Includes letters of commitment from funding agencies for non-U.S. participating institutions
25. Includes letters of commitment from all U.S. organizations offering contributions
26. Includes letters of commitment from all major partners

Science Evaluation

Science Panel Composition and Organization

- The Program Scientist leads the Science Panel.
- Science evaluators are typically, but not exclusively, recruited from the academic, governmental, and industrial research communities.
- The Science Panel evaluates Science Merit and Scientific Implementation Merit and Feasibility.
- The science evaluation will be implemented *via* one Science Panel, but sub-panels may be employed, depending on the number and variety of proposed investigations.
  - Any sub-panel will be led by a NASA HQ Civil Servant, with a co-chair from the scientific community.
  - Any sub-panel will have an Executive Secretary.
- Each proposal will be evaluated by assigned panel members.
  - The Lead Evaluator for each proposal will lead the discussion.
  - A Supporting Evaluator will take notes on the discussion.
- The TMC Panel may provide comments and questions to the Science Panel.

Science Panel Procedures

- Each member of the Science Panel will evaluate Proposals as directed by the Chair.
  - If special science expertise is required, the Science Panel may utilize non-panel/ mail-in evaluators to assist with one or more proposals.
  - Non-panel/mail-in evaluators will evaluate only those parts of proposals pertinent to their scientific specialties.
- A Science Evaluation Team Meeting will be held upon completion of Science Evaluation for all proposals.
  - The Science Panel will compile all of the findings for each proposal.
  - For each proposal, the Chair or designated Lead Evaluator will lead the discussion, summarize the proposed investigation, and document the results.
  - If warranted, the panel may reconsider evaluations at the Science Evaluation Team Meeting.
  - Evaluations of all proposals are reviewed during the Science Evaluation Team Meeting to ensure that standards have been applied uniformly and in an appropriate and fair manner.
  - The Lead Evaluator captures/synthesizes Panel evaluations.

Science Panel Products

For each proposal, the Science Evaluation will result in:

- Form A
  - Proposal title, PI name, and submitting organization;
  - Based on findings, Scientific Merit of the Investigation adjectival ratings from each evaluator, ranging from “Excellent” to “Poor”;
  - Summary rationale for the median rating;
  - Narrative findings, identified as major or minor strengths or weaknesses;
  - comments to PI; comments to NASA.
- Form B
  - Proposal title, PI name, and submitting organization;
  - Based on findings, a Scientific Implementation Merit and Feasibility of the Investigation adjectival ratings from each evaluator, ranging from “Excellent” to “Poor”;
  - Summary rationale for the median rating;
  - Narrative findings, identified as major or minor strengths or weaknesses;
  - comments to PI; comments to NASA.

Science Panel Evaluation Factors

Criterion A: Scientific Merit of the Investigation:

- Factor A-1. Compelling nature and scientific priority of the proposed investigation's science goals and objectives.
- Factor A-2. Programmatic value of the proposed investigation.
- Factor A-3. Likelihood of scientific success.
- Factor A-4. Scientific value of the Threshold Science Mission.

Science Panel Evaluation Factors

Criterion B: Scientific Implementation Merit and Feasibility of the Investigation:

- Factor B-1. Merit of the instruments and mission design for addressing the science goals and objectives.
- Factor B-2. Probability of technical success.
- Factor B-3. Merit of the data analysis, data availability, and data archiving plan.
- Factor B-4. Science resiliency.
- Factor B-5. Probability of science team success.

Science Evaluation Products: Strengths and Weaknesses

- **Major Strength:** A facet of the response that is judged to be well above expectations and substantially contributes to the merit.
- **Major Weakness:** A deficiency or set of deficiencies taken together that are judged to substantially detract from the merit.
- **Minor Strength:** A strength that substantiates the merit.
- **Minor Weakness:** A weakness that detracts from the merit.

Form A and B Grade Definitions

Form A and B Grade Definitions

- **Excellent**: A comprehensive, thorough, and compelling proposal of exceptional merit that fully responds to the objectives of the AO as documented by numerous and/or significant strengths and having no major weaknesses.
- **Very Good**: A fully competent proposal of very high merit that fully responds to the objectives of the AO, whose strengths fully outbalance any weaknesses.
- **Good:** A competent proposal that represents a credible response to the AO, having neither significant strengths nor weakness and/or whose strengths and weaknesses essentially balance.
- **Fair**: A proposal that provides a nominal response to the AO, but whose weaknesses outweigh any perceived strengths.
- **Poor**: A seriously flawed proposal having one or more major weaknesses (e.g., an inadequate or flawed plan of research, or lack of focus on the objectives of the AO).

TMC Evaluation

TMC Panel Composition and Organization

- The Acquisition Manager, who is a Civil Servant in the NASA Science Office of Mission Assessments (SOMA) at Langley Research Center (LaRC), leads the TMC panel.
  - SOMA works directly for NASA Headquarters and is firewalled from the rest of LaRC.
- TMC evaluators are a mix of the best non-conflicted contractors, consultants, and Civil Servants who are experts in their respective fields.
  - Evaluators read every assigned proposal.
  - Evaluators provide ratings of proposals as well as findings.
- Additionally, specialist evaluators may be called upon in cases where technical expertise that is not represented on the panel is needed.
  - Specialist Evaluators evaluate only those parts of a proposal that are specific to their particular expertise.
  - Specialist Evaluators provide only findings; they do not provide ratings.

TMC Panel Evaluation Factors

Criterion C: TMC Feasibility of the Mission Implementation, Including Cost Risk:

- Factor C-1. Adequacy and robustness of the instrument implementation plan.
- Factor C-2. Adequacy and robustness of the mission design and plan for mission operations.
- Factor C-3. Adequacy and robustness of the flight systems.
- Factor C-4. Adequacy and robustness of the management approach and schedule, including the capability of the management team.
- Factor C-5. Adequacy and robustness of the cost plan, including cost feasibility and cost risk.

Typical TMC Evaluation Sub-Factors

- Instruments
  - Instrument design, accommodation, and interface
  - Design heritage
  - Environment concerns
  - Technology readiness
  - Instrument systems engineering
- Mission Design and Operations
  - Launch mass margin
  - Trajectory analysis
  - Launch services
  - Concept of mission operations
  - Ground facilities – new/existing
  - Telecom
- Flight Systems
  - Hardware/software design
  - Design heritage
  - Spacecraft systems engineering
  - Design margins (excluding launch mass)
  - Qualification and Verification
  - Assembly, Test, and Launch Operations
  - Mission Assurance
  - Development of new technology
- Management and Schedule
  - Roles and responsibilities
  - Team experience and key individuals' qualifications
  - Project management and systems engineering
  - Organizational structure and Work Breakdown Schedule (WBS)
  - International participation
  - Risk management, including descope plan and decision milestones
  - Project-level schedule
- Cost
  - Basis of Estimate (BOE)
  - Cost realism and completeness
  - Cost reserves by phase
  - Comparison with TMC estimates (including parametric models and/or analogies)

TMC Evaluation Product: Form C

For each proposal, the TMC evaluation will result in a Form C that contains:

- Proposal title, PI name, and submitting organization;
- An adjectival risk ratings from each evaluator of “Low Risk”, “Medium Risk” or “High Risk” for the TMC Feasibility of the Mission Implementation, Including Cost Risk that is derived based on the findings;
- Summary rationale for the median risk rating;
- Narrative findings, identified as major or minor strengths or weaknesses, including cost analysis;
- Comments to the PI, comments to NASA, comments to the Science Panel.

TMC Evaluation Product: Findings

Major and minor strengths and weaknesses are defined as follows:

- **Major Strength:** A facet of the implementation response that is judged to be well above expectations and can substantially contribute to the ability of the project to meet its technical requirements on schedule and within cost.

- **Minor Strength:** A strength that is worthy of note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.

- **Major Weakness:** A deficiency or set of deficiencies taken together that are judged to substantially weaken the project's ability to meet its technical objectives on schedule and within cost.

- **Minor Weakness:** A weakness that is sufficiently worrisome to note and can be brought to the attention of Proposers during debriefings, but is not a discriminator in the assessment of risk.

*Note: Findings that are considered "as expected" are not documented in the Form C.

TMC Evaluation Product: Risk Ratings

Based on the narrative findings, each proposal will be assigned one of three risk ratings, defined as follows:

- **Low Risk:** There are no problems evident in the proposal that cannot be normally solved within the time and cost proposed. Problems are not of sufficient magnitude to doubt the Proposer's capability to accomplish the investigation well within the available resources.

- **Medium Risk:** Problems have been identified, but are considered within the proposal team's capabilities to correct within available resources with good management and application of effective engineering resources. Mission design may be complex and resources tight.

- **High Risk:** One or more problems are of sufficient magnitude and complexity as to be deemed unsolvable within the available resources.

*Note: Only Major Findings are considered in the risk rating.

Cost Analysis in Support of the Form C

- Initial cost analyses will be accomplished on the basis of information provided in the proposals (consistency, completeness, proposed basis of estimate, contributions, use full cost accounting, maintenance of reserve levels, and cost management, etc.).
- Cost will be evaluated with three different models.
- Cost threats, risks, and risk mitigations will be analyzed.
- Cost realism (a.k.a. “cost risk”) is based on models, analogies, heritage, and grass roots information from proposals.
  - Cost Realism is reported as an adjectival rating, ranging from “Low Risk” to “High Risk” on a five-point scale.
- Cost Evaluation Summaries and draft Forms C will be completed to the same level of detail prior to the Plenary.
- During the TMC plenary, the entire panel will participate in Cost deliberations:
  - All information from the entire evaluation process will be considered in the final cost assessment.
- Significant findings from the Cost Evaluation Summaries will be documented in the Cost Factor on Form C and considered in the Form C grade.
- Cost impacts of significant technical weaknesses will be documented in the Form C.

Categorization

Categorization

Upon completion of the evaluations, the results will be presented to the Categorization Committee, an *ad hoc* subcommittee of the SMD AO Steering Committee composed solely of Civil Servants and IPA appointees, and appointed by the Associate Administrator for SMD.

This committee will consider the evaluation results and, based on the evaluations, will categorize each proposal according to procedures required by NFS 1872.403-1(e). The categories are defined as:

- Category I. Well conceived and scientifically and technically sound investigations pertinent to the goals of the program and the AO's objectives and offered by a competent investigator from an institution capable of supplying the necessary support to ensure that any essential flight hardware or other support can be delivered on time and data that can be properly reduced, analyzed, interpreted, and published in a reasonable time. Investigations in Category I are recommended for acceptance and normally will be displaced only by other Category I investigations.

Categorization (continued)

- Category II. Well-conceived and scientifically or technically sound investigations which are recommended for acceptance, but at a lower priority than Category I.

- Category III. Scientifically or technically sound investigations which require further development. Category III investigations may be funded for development and may be reconsidered at a later time for the same or other opportunities.

- Category IV. Proposed investigations which are recommended for rejection for the particular opportunity under consideration, whatever the reason.

Evaluation Process Conclusion

Once Categorization has been completed, the Evaluation is considered ended unless found deficient by a subsequent review.

Addendum 1; 01/18/2012; TMC Plenary Meeting Observers

The Persons below have been approved to attend the EV-2 TMC Plenary Meeting as Observers. The approval was obtained following the process outlined in the document “Statement of Policy on Observers at Panel Reviews of Proposals” October 9, 2009. The observers shall abide by the rules of behavior outline on that document. The approved observers are;

1. Frank Peri, Earth Systems Science Pathfinder (ESSP) Office
2. James Wells, ESSP Office
3. Richard Law, ESSP Office
4. Lissa Jordin, SOMA
5. Cindy Daniels, SOMA